

REMARKS

Claims 1-25 are currently pending in the subject application, and are presently under consideration. Claims 1-23 have been rejected. Claims 1-3, 5, 7-12, 14, 16-17, and 19-23 have been amended. Claim 18 has been cancelled. New claims 24 and 25 have been added. Favorable reconsideration of the application is requested in view of the amendments and comments herein.

I. Rejection of Claims 1, 4-7, and 17-23 Under 35 U.S.C. §102(e)

Claims 1, 4-7, and 17-23 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,438,354 to Thompson, et al. ("Thompson"). Claim 18 has been cancelled. Withdrawal of this rejection is respectfully requested for at least the following reasons.

Amended claim 1 recites a satellite for routing high power amplified (HPA) signals comprising n first-stage HPA switches, each corresponding to one of the 0 to n HPA channels. Claim 1, as amended, also recites M multiplexing devices, M second-stage HPA switches, and M downlink antenna ports coupled to the M second-stage HPA switches, such that the n first-stage HPA switches, M multiplexing devices, and the M second-stage HPA switches are configurable to route any combination of the 0 to n channels to any of the M downlink antenna ports.

Thompson teaches a reconfigurable payload for a satellite that mimics the payload of one of six satellites in a constellation with various frequency plans and antenna coverage areas. The Office Action dated July 14, 2004, asserts that the n first-stage switches are taught by Section II in Fig. 8 (page 2). Thompson, however, does not teach that first-stage switches and second-stage switches are HPA switches for switching HPA signals, in that there are not two separate sets of switches after the high power amplifiers of Thompson. Thompson only teaches one set of switches after the high power amplifiers (Fig. 8, reference number 46). Therefore, Thompson does not teach n first-stage HPA switches, each corresponding to one of the 0 to n HPA channels, and M second-stage HPA switches, as recited in amended claim 1.

In addition, as described above, Thompson teaches a reconfigurable payload that can emulate any of the six satellites in the fleet (col. 8, ll. 1-2). This allows a single satellite to

provide backup for any *one* satellite that may fail in fleet (col. 8, ll. 11-13, emphasis added). In such a way, Thompson teaches that an uplink signal can be switched and redirected to a coverage area of a failed satellite. However, Thompson does not teach the n first-stage HPA switches, M multiplexing devices, and the M second-stage HPA switches are configurable to route any combination of the 0 to n HPA channels to any of the M downlink antenna ports, as recited in claim 1.

For the reasons stated above, Thompson does not anticipate amended claim 1. Withdrawal of the rejection of claim 1, as well as claims 4-7 which depend therefrom, is respectfully requested.

Amended claim 17 recites a switching mechanism for routing signals from up to n HPA channels to any of M downlink beams comprising a means for directing HPA signals corresponding to each of said uplink signals through n first-stage HPA switches each corresponding to one of 0 to n channels, M multiplexing devices each to combine $n/2$ channels into one output channel, and M second-stage HPA switches to M downlink antenna ports such that any combination of 0 to n HPA signals can be directed to any of the M downlink antenna ports. As discussed above with regard to claim 1, Thompson does not teach both a first and a second set of HPA switches, and further does not teach routing HPA signals to M downlink antenna ports in any combination. Accordingly, Thompson does not anticipate amended claim 17. Withdrawal of the rejection of claim 17, as well as claim 19 which depends therefrom, is respectfully requested.

Amended claim 20 recites a method of routing signals on a satellite comprising routing the high power amplified signals such that any combination of 0 to n HPA signals can be directed to any of M downlink antennas. As discussed above with regard to claims 1 and 17, Thompson does not teach routing signals to M downlink antenna ports in any combination. Accordingly, Thompson does not anticipate amended claim 20. Withdrawal of the rejection of claim 20, as well as claim 21 which depends therefrom, is respectfully requested.

Amended claim 22 recites a method of routing n HPA signals to M downlink antenna ports on a satellite comprising directing the n first-stage HPA signals to any of the M downlink

antenna ports in any combination using n first stage HPA switches, M multiplexing devices, and M second-stage HPA switches. As discussed above with regard to claims 1 and 17, Thompson does not teach both a first and a second set of HPA switches, and further does not teach routing signals to M downlink antenna ports in any combination. Thompson therefore does not anticipate amended claim 22. Withdrawal of the rejection of claim 22, as well as claim 23 which depends therefrom, is respectfully requested.

For the reasons described above, claims 1, 4-7, 17, and 19-23 should be patentable over the cited art. Accordingly, withdrawal of this rejection is respectfully requested.

II. Rejection of Claims 2-3 and 8-16 Under 35 U.S.C. §103(a)

Claims 2-3 and 8-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Thompson in view of U.S. Publication No. 2003/0038547 to Reinhardt, et al. ("Reinhardt"). Claim 13 has been cancelled. Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claim 2 recites that each of said n first-stage HPA switches comprises an $M/2$ output mechanical switch or set of switches, and claim 3 recites that each of said M second-stage HPA switches comprises a two-output mechanical switch. Claims 2 and 3 depend from claim 1. As discussed above with regard to claim 1, Thompson does not teach both a first and a second set of HPA switches, and further does not teach routing HPA signals to M downlink antenna ports in any combination of the 0 to n channels to any of the M downlink antenna ports, as recited in claim 1.

Reinhardt teaches a switch matrix comprising a plurality of input and output switches. The Office Action relies on Reinhardt for its teaching of the use of mechanical switches (Office Action dated July 14, 2004, page 6). However, the addition of Reinhardt does not cure the deficiencies of Thompson to teach or suggest both a first and a second set of HPA switches, and further do not teach or suggest routing signals to M downlink antenna ports in any combination of the 0 to n channels to any of the M downlink antenna ports. Accordingly, neither Thompson nor Reinhardt, alone or in combination, teach or suggest the recitations of amended claim 1.

Therefore, claims 2 and 3, which depend from claim 1, should be patentable over the cited art. Withdrawal of the rejection of claims 2 and 3 is respectfully requested.

Amended claim 8 recites a satellite mechanism for routing any combination of 0 to n high power amplified (HPA) signals to any of M downlink beams comprising a plurality of first HPA switching devices each operative to route a HPA signal to at least one of two switch outputs, a plurality of multiplexing devices each operative to receive inputs from at least one of the two switch outputs of a respective set of the plurality of first HPA switching devices and to provide a plurality of output signals, and a plurality of second HPA switching devices each corresponding to one of the plurality of multiplexing devices and provided to receive the plurality of output signals. Amended claim 8 further recites that the plurality of first HPA switching devices, the multiplexing devices, and the plurality of second HPA switching devices are configurable to route any combination of the 0 to n HPA signals to any of M antenna ports. As described above with regard to claim 1, neither Thompson nor Reinhardt, alone or in combination, teach or suggest both a first and a second set of HPA switches, and further do not teach or suggest routing signals to any of M downlink antenna ports in any combination. Withdrawal of the rejection of claim 8, as well as claims 9-12 and 14-16 which depend therefrom, is respectfully requested.

For the reasons described above, claims 2-3, 8-12, and 14-16 should be patentable over the cited art. Accordingly, withdrawal of this rejection is respectfully requested.

III. New Claims 24 and 25

New claim 24 depends from claim 1 and recites M test ports, each corresponding to a respective one of the M second-stage HPA switches, wherein each of the M second-stage HPA switches is capable of switching a respective output from one of the M multiplexing devices to the corresponding test port to allow access to test the respective high power amplified signal. As described above, claim 1 should be allowed over the cited art, therefore, so also should new claim 24. In addition, neither Thompson nor Reinhardt, alone or in combination, teach or suggest M test ports, each corresponding to a respective one of the M second-stage HPA switches. Thus, new claim 24 should be allowed over the cited art.

New claim 25 depends from claim 8 and recites a plurality of test ports, wherein each of the plurality of second HPA switching devices is capable of switching a respective one of the plurality of output signals to a corresponding one of the test ports to allow access to test the respective high power amplified signal. As described above, claim 8 should be allowed over the cited art, therefore, so also should new claim 25. In addition, neither Thompson nor Reinhardt, alone or in combination, teach or suggest a plurality of test ports, each corresponding to a respective one of the plurality of second HPA switching devices. Thus, new claim 25 should be allowed over the cited art.

Serial No. 10/044,284

Docket No. NG(ST)7228

CONCLUSION

In view of the foregoing remarks, Applicant respectfully submits that the present application is in condition for allowance. Applicant respectfully requests reconsideration of this application and that the application be passed to issue.

Please charge any deficiency or credit any overpayment in the fees for this amendment to our Deposit Account No. 20-0090.

Date 11/11/04

Respectfully submitted,

Christopher P. Harris

Christopher P. Harris

Registration No. 43,660

CUSTOMER NO.: 26,294

TAROLLI, SUNDHEIM, COVELL, & TUMMINO L.L.P.

526 SUPERIOR AVENUE, SUITE 1111

CLEVELAND, OHIO 44114-1400

Phone: (216) 621-2234

Fax: (216) 621-4072